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LONDON:
JOHN VAN VOORST, PATERNOSTER ROW.

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BIRDSNESTING:

BEING A COMPLETE DESCRIPTION OF THE NESTS AND EGGS OF BIRDS WHICH BREED IN GREAT BRITAIN AND IRELAND.

By EDWARD NEWMAN, F.L.S., F.Z.S.

This work is written expressly for the use of out-of-door naturalists and that better class of schoolboys who take up Natural History as an instructive recreation. Under each species will be found—

1. The English name.
2. The Latin name.
3. The situation in which the nest is to be found.
4. The materials of which the nest is built, together with any particulars of its shape which may assist in determining by what bird it is built.
5. The number and colour of the eggs, describing such variations as are occasionally met with.

In compiling this work the sources whence the author has drawn his information are—

1. His own memoranda.
2. Colonel Montagu's 'Ornithological Dictionary.'
3. Mr. Selby's 'Illustrations of British Ornithology.'
4. Mr. Hewitson's 'Oology.'
5. The 'Zoologist,' not only every volume but every number of which abounds in original and highly important observations on the life-history and distinguishing characters of birds.
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JOHN VAN VOORST, 1, PATERNOSTER ROW.

Collected Observations on British Reptiles.

By EDWARD NEWMAN.

(Continued from S. S. 1629.)

Order III. SAURIANS (SAURIA) *continued.*

Family SCINCOIDEÆ.

"The head is covered by horny, thin angular plates, with distinct regular sutures; the neck of the same thickness with the breast; the rest of the body and the limbs everywhere are clothed with imbricated scutes, generally having their free margins slightly rounded and arranged in the form of a quicunx; back rounded, without crests or spines: belly cylindrical; no furrow along the sides; tongue free, not generally notched at the tip, covered with papillæ in whole or in part."—*Clermont.*

THE BLIND-WORM OR SLOW-WORM (*Anguis fragilis*).

Has no palate teeth; the maxillary teeth are rather long and very slender, sharp-pointed, and slightly bent backwards towards the throat; the tongue is rather fleshy, as compared with that of true lizards it is slightly notched at the tip: the nostrils are lateral and the eyelids imbricated with scutes; the ears are simple apertures, and even these are almost entirely concealed by the imbricated scutes. The body is slightly tetragonal, but unless examined with the express purpose of observing this, appears uniformly cylindrical; the nose is obtuse; the bones of the head are solid and united, and though the swallow is very small, the neck exhibits scarcely any restriction; there are no legs, but aborted leg-bones are to be found beneath the scutes; the body very gradually decreases in size to the extremity, which is blunt; there is no apparent division between body and tail. The colour is grayish brown with a slightly silvery iridescence; there is a narrow dark brown medio-dorsal stripe commencing on the forehead and continued to the caudal extremity; the sides are generally darker than the back, and the belly is bluish black with paler reticulations: the length is generally rather less than a foot. The young are produced alive, and usually six or eight at a birth. The food consists principally, if not entirely, of the small garden slug (*Limax agrestis*), and the larvæ of Lepidoptera. This animal becomes perfectly reconciled to captivity in a few days, and will readily take a small slug if offered it even on the day after being captured: the slug

BRITISH MUSEUM

should be presented to the creature crawling on a little stick or twig, and the bright eye of the so-called *blind*-worm seems at once to sparkle with pleasure; but there is no rapid motion—indeed there is no need for haste—in seizing the victim as in the case of lizards feeding on flies: on the contrary, the head is raised above the slug by an almost imperceptible movement quite in accordance with the deliberate gliding progress of the slug; and when the head is directly above what we might call the loins of the slug, the mouth is slowly opened and the slug bitten just in the manner that a dog bites a rat.

The skin—and I speak from oft-repeated observation—is shed piecemeal, and generally once in the year: Mr. Bell, I see, makes a different statement, viz., that it comes off in one piece in the same manner as that of Ophidians: this I have never seen.

When handled the blind-worm becomes excessively rigid, and the body and tail will separate rather than the creature will allow itself to be unbent: like the lizards, it has the power of partially reproducing the lost tail.

Order IV. SNAKES (*Ophidia*).

Have a long and flexible body without legs, and closely covered with scutes or divisions: the bones of the head are separate, and so loosely arranged as to admit of an almost indefinite expansion of the jaws; hence the possible truth of some of the marvellous accounts of boas swallowing animals apparently larger than themselves. A Cyclopedia of high reputation now before me, says that "some of the species attain a very large size, measuring thirty or forty feet in length, and when they are of that size they can master deer or even buffaloes." A celebrated traveller tells a story of a boa having swallowed a horse as large as a London dray-horse. We also read of an enormous snake in Africa arresting the progress of a Roman army, and this event is narrated in a manner that has no *primâ facie* evidence of exaggeration. All I can say of such accounts is that the skins in our museums and the admeasurements actually made do not convey to my mind any idea of such enormous bulk. The ribs are slender and very numerous; and, from repeated observation, they appear to me the principal organs of progression: by watching the common snake as it moves slowly about its place of confinement, the ribs are seen to move in succession like the legs of a centipede. Most authors seem to consider the ventral scutes as the principal means of progression; but in this I am not disposed to agree, since the feeling, when a tame snake crawls over my hands, indicates a movement of the ribs and not of the scutes: snakes have neither external ears nor eyelids. We have in Britain three species belonging to two families.

Family COLUBRIDÆ.

Have no poison-fangs either grooved or tubular: they are consequently innocuous.

THE COMMON SNAKE (*Coluber Natrix.*)

Ringed Snake; Grass Snake; Frog Snake.

Coluber Natrix, *Schinz*, vol. ii., p. 38; *Clermont*, *Quadrupeds and Reptiles of Europe*, p. 220.

Natrix torquata, *Bell*, *Reptiles*, p. 49.

The teeth are sharp-pointed and slant backwards, thus rendering the escape of an animal that has been seized extremely difficult: the gape extends to the back of the head, the tongue is divided to a third of its length, the two divisions being sharp-pointed; the head is wide behind and flattened on the crown; the neck is restricted, and the division between head and body is thus distinctly marked; the body is very long, and very gradually tapering to the extremity of the tail, which is slender; the scutes on the back have a distinct longitudinal keel: the ventral scutes are about one hundred and seventy, the caudal ones fifty-five to sixty-five pairs.

Snakes vary greatly in size, but I think chiefly in accordance with age and sex. The female, which is usually much larger than the male, sometimes—although rarely—attaining a length of four feet; the male, when full grown, measures above two feet and a half in length.

The favorite food of snakes is the common frog, which is pursued with an activity and certainty of success that is almost painful to contemplate. The frog seems perfectly aware of the first approach of the snake, and leaps with great vigour to the right and left, uttering at the same time a most piteous squeal or squeak: by degrees the spasmodic leaps become shorter and shorter, and at last the victim abandons itself helplessly and hopelessly to its impending fate. I have often, when a school-boy, produced every demonstration of this abject terror by wriggling a long stick through the uncut grass. Mr. Bell says, the manner in which the snake takes its prey is very curious. "If it be a frog it generally seizes it by the hinder leg, because it is generally taken in pursuit. As soon as this takes place, the frog, in most instances, ceases to make any struggle or attempt to escape. The whole body and the legs are stretched out as it were convulsively, and the snake gradually draws in, first, the leg he had seized, and afterwards the rest of the animal, portion after portion, by means of the peculiar mechanism of the jaws so admirably adapted for this purpose. * * * When a frog is in the process of being swallowed in this manner, as soon as the snake's jaws have reached the body, the other hinder leg becomes turned forwards; and as the body gradually disappears, the three legs and the head are seen standing forwards out of the snake's mouth in a very singular manner."* (Bell's 'British Reptiles,' p. 51; Second Edition.)

This statement agrees very well with my own observations; but perhaps as I have had frequent opportunities of watching this rather cruel process, I may make a trifling addition from my own experience. I have always seen the frog seized, as Mr. Bell describes, by the hind leg, but I have generally seen the position changed before the act of swallowing actually commenced; the head going down the throat first: I have never seen it standing out of the mouth after any portion of the body had been swallowed.

The taste for frogs leads the snake to frequent those damp situations in the neighbourhood of water where frogs abound; it takes to the water without the slightest hesitation, and swims with remarkable ease, celerity and grace—the head being held clear of the water, as in fanciful representations of sea-serpents. Snakes are very common in such situations in England, but less so in Scotland, and are totally unknown in Ireland.

Snakes are truly oviparous, the female laying from five to fifteen eggs, which are of a bluish white colour and adhere together in a mass: they are generally deposited in an excavation on some damp bank facing the south, and are hatched by atmospheric influence; the egg-shells are tough and of a substance rather resembling leather than the brittle calcareous matter of which the egg-shells of birds is composed. It has been a hypothesis universally received that snakes, after once depositing their eggs, take no further heed of them; but this has been assumed on the principle that the absence of evidence argues the absence of fact. Since observations have become more general and more numerous, there seems sufficient ground for believing that the apathy of snakes, as regards their young, is assumed rather than proved. The evidence of incubation which occurred in the Zoological Gardens, and several reported, but rather discredited, instances of the common female snake having been found in hot-beds covering her eggs with her body, have taught us greater caution in the building of hypotheses on the absence of observed fact: it is a parallel case to the erection of houses without foundations.

THE LIZARD SNAKE (*Coluber austriacus*).

The Smooth Snake.

Coluber austriacus, *Buon. Fauna Italica*, with figure.
Coronella lævis, *Schinz*, vol. ii., p. 45.

The teeth of the Lizard Snake are slender and pointed, and slant backwards; the eyes are small; the body is cylindrical, the neck not being distinct, the head seeming more closely united with the body than in the common snake; the tail is short and stout; the dorsal scutes are arranged in nineteen series, and are entirely without keels; the ventral scutes are one hundred and sixty-two in number, and the subcaudal scutes in the specimen I have counted are sixty-two pairs. The colour of the back is olive-brown with two parallel rows of black spots, which vary in size and intensity in different individuals: those nearest the tail are invariably smaller and less distinct. In some specimens the spots are scarcely distinguishable; in others they are bright, distinct, and ornamental.

Like the Common Snake, the Lizard Snake varies considerably in size: the discrepancy, as in that species, is in all probability dependant on age and sex: it is, however, decidedly less than the Common Snake—the female, which is invariably larger than the male, rarely attains a length of two feet.

The food of the Lizard Snake consists almost entirely of the Sand Lizard (*Lacerta Stirpium*), but there is excellent evidence that the Common Lizard (*Lacerta agilis*) may be included in its bill of fare, when the two reptiles occur in the same locality; indeed, some of the records are so obscurely worded as to leave it doubtful which species of lizard is intended: there is also a well-authenticated instance of the Lizard Snake having, when in confinement, devoured a Blind-worm.

We are indebted to Dr. Gray, of the British Museum, for first identifying this snake as the Coluber austriacus of Continental authors: it is, nevertheless, open to considerable doubt whether a young individual had not been previously described by Mr. Sowerby, in his 'British Miscellany,' as a species new to Britain, and figured in the third plate of that work, under the name of Coluber dumfriesiensis: the figure, however, does not support this suggestion, neither does it agree better with the Common Snake. On this subject Mr. Bell makes the following observation: "There is, I think, great reason to believe that it [Coluber dumfriesiensis] was a very young Natrix torquata, [Coluber Natrix], but differing certainly, in many respects, from the usual appearance and characters of that species: it was three or four inches in length, of a pale brown colour, with pairs of reddish brown stripes from side to side over the back, somewhat zig-zag, with intervening spots on the sides. The most remarkable peculiarity mentioned, however, is that the scales are extremely simple, *not* carinated; the abdominal plates were one hundred and sixty-two—those under the tail about eighty."—*Bell's* ‘ *British Reptiles*,’ p. 60.

It will be seen that the ornamentation of this little snake does not correspond with that of any known British species; but the peculiarity of the dorsal scutes, as well as the number of ventral scutes, agrees with that of Coluber austriacus.

The first unquestionable evidence of the existence of the Lizard Snake in Britain was supplied by the Hon. Arthur Russell, and kindly communicated to the ‘Zoologist’ by Dr. Gray as follows:—

"The Hon. Arthur Russell has sent to the British Museum a specimen of the female Coronella austriaca [Coluber austriacus], which was taken by a resident, near the flag-staff at Bournemouth, Hampshire,—the habitat of the larger heath lizard (Lacerta Stirpium). These species are found together not uncommonly, and generally distributed over Europe. The snake is said to live on the lizard: this is one of the most interesting additions to the British Fauna which has been made for many years, as it is not common to find a new vertebrate animal except occasional visitants: this snake has small scales, is brown, with two lines of darker spots down the sides of the back, a dark blotch on the shoulder and head, and a blackish streak under the eye. It is like a viper in size and general appearance, but wants the dark lozenge-shaped spots on the back."—*John Edward Gray, in* ‘ *Zoologist*,’ p. 6731.

This interesting communication was shortly followed by another from that eminent and indefatigable zoologist, Mr. Bond, who appears to have met with the species four or five years earlier, although he had not identified it with Coluber austriacus. Mr. Bond's communication is as follows:—

"I captured a specimen of the new British Snake Coronella austriaca [Coluber austriacus], five or six years ago, in June, near Ringwood, Hants, when I was after Eulepia cribrum: I thought at the time I had something new, but, not taking much interest in the reptiles, it was put into spirits and forgotten until I saw Dr. Gray's notice in the 'Zoologist.' I have sent the specimen to the British Museum, so that any one may see it. If this species always accompanies the Sand Lizard (*Lacerta Stirpium*), it may possibly be found nearer London, as I have found the Sand Lizard at Weybridge, Surrey."—*Frederick Bond, in 'Zoologist,'* p. 6787.

This communication was afterwards supplemented by a third from Dr. Blackmore, who found not only our three British Snakes, but also our two British Lizards, within the compass of fifty yards, at Mr. Bond's Bournemouth Station. He took two specimens of the Lizard Snake home, and kindly sent me the following notice of their proceedings:—

"My friends, the Smooth Snakes, when first caught, hiss and bite freely, but soon release their hold; unlike the ringed snake, they do not emit any disgusting secretion when irritated; their voice, if I may use the term, is a different tone, being softer and more feeble than either that of the adder or common snake; they are also far less shy and more easily tamed than the common snake. On the second day after the capture I procured three full-sized viviparous lizards, and placed them in the glass jar with the snake: it immediately became excited, and in a few minutes seized one of the lizards a little in front of the hind legs: the lizard was perfectly undaunted by this procedure, and returned the compliment by turning and seizing with its mouth a small piece of the skin about the middle of the snake's body. The snake, after twisting in every direction, shifted its hold and bit the lizard across the middle of the body, and finally set to work at the head, gnawing it like a dog does a bone, but still, in spite of this, the lizard held firmly on. This contest lasted for more than ten minutes, and then the snake seemed to consider it a bad job, and ceased biting the lizard, which, having gained a victory, soon let go its hold and ran away: the poor lizard had, however, suffered most in the conflict, and died the next day. The snake now turned its attention to another of the lizards, and this time seized it by the root of the tail, which of course came off, and was quickly swallowed: barely had the tip disappeared from sight, before the snake suddenly caught the tailless lizard by the head, and, by the usual slow process commenced gorging its prey—an operation that took exactly sixteen minutes by my watch.

In the night, or early the next morning, the third lizard was eaten by the same snake. My second capture was somewhat of an epicure, and at present has consumed more tails than lizards; it does not, however, confine itself entirely to tails. With regard to the same tail-eating propensity of this snake, I may mention that three of the viviparous lizards which I caught had previously lost their tails, but in what manner is entirely open to conjecture."—*H. P. Blackmore, in the 'Zoologist,'* p. 9735.

These most interesting records, of course, induced a more extended and general search for the "new Snake,"—a search that was rewarded by the capture of many other specimens, records of which appeared not only in the 'Zoologist' but in the 'Field' newspaper, and many other Journals which occasionally contain Natural-history notices. Although it may, perhaps, be thought unnecessary to say more on the food of this snake, I cannot resist the temptation to cite two more corroborative paragraphs, not only on account of their intrinsic value, but also on account of the high reputation of the writers as leading herpetologists.

"A large male specimen of this snake, which I kept for a long time on account of its tameness, fed exclusively on lizards, never on mice or frogs. After having fed it for some time with ordinary sized lizards, proportionate to the size of the snake, I brought a very large specimen of Lacerta agilis to its cage, in order to try the strength of the snake. The lizard was immediately seized; but after a long fight, during which the lizard several times appeared to be entangled in the writhings of the snake,—always managing, however, to free its head which had been seized by the snake,—the latter changed the point of attack, and got hold of the tail of the lizard: this, of course, broke off, and was devoured by the snake. From this time the snake always seized the tails of the lizards given him for food, without further attacking them; nor, if tailless lizards were put to him, would he attempt to devour them."—*Dr. Günther, in the 'Zoologist' for October*, 1862.

The other and last quotation on the food of the lizard is translated from the writings of Dr. Opel, by the Rev. W. W. Spicer, who obligingly sent me the translation for publication in the 'Zoologist.'

"Wyder states that 'the Coluber austriacus devours small lizards, round which it twines itself, crushing them after the manner of the great tropical serpents. Sometimes it seizes its prey by the tail, and if the latter breaks off it is swallowed at once. In captivity lizards are preferred to any other description of food.' I can fully confirm this statement of Wyder. The animal I have described above is the only one I ever saw take its food; the first instance occurred in this way:—In the year 1857 I was in possession of such a number of snakes of various species that I was obliged to place my Coronella, from the Fürstenstein Grund, in the same cage with a blindworm (*Anguis fragilis*), which had been there for some time already. The two appeared to be good friends, and took no particular notice of each other: both passed into their winter sleep as the cold came on, and with the return of spring again woke up and shared the cage in peace, coiled up together on the side where the sun's rays struck warmest. The Anguis ate freely of the earthworms offered to it, though all attempts failed to induce the Coronella to take any food: small lizards placed near it were allowed to crawl away without notice, and even young mice were disregarded. One morning (May 9th) I observed a great commotion in the cage: at this time the Coronella had not cast its skin, nor had it eaten anything for nearly nine months: the blindworm was striving to escape the fixed gaze of its companion, which was following it all over their prison. I placed some fresh water in the cage, and just at that instant the snake threw itself with irresistible force upon the blindworm, fixed its teeth into its head, and, flinging fold after fold of its body round its victim, held it in a vice-like grip, exactly after the manner of the giant serpents of the tropics; so tightly, indeed, did it embrace the unhappy blindworm, that the contents of the latter's intestinal canal were violently forced out and scattered over the glass sides: each desperate struggle of the blindworm was followed by a closer grasp on the part of the Coronella, which looked exactly like a roll of tobacco, through which the extreme end of the blindworm's tail protruded. The act of swallowing was very slow at first: every contraction of the muscles of the throat and jaws was accompanied by a lateral movement of the head—the hooked bent teeth, first of one side then of the other, catching a fresh grasp of the victim, and gradually drawing it in. The process of deglutition began at 9·30 a.m., and was not concluded until 12·45; the blindworm was eleven inches long; the head alone occupied more than an hour: even at one o'clock, when the Coronella opened its jaws wide, which it continued to do repeatedly after taking its food, I could still see the end of the blindworm's tail; the fact was, it was too long to be taken in entirely, and therefore gradually slipped down, as the portion first engulphed was digested. After the meal was quite finished, the Coronella sought out the water, and seemed to take great pleasure in bathing, remaining in it for an hour at a time—no doubt to mitigate the great heat generated by its wonderfully active digestion."—(Zool. 9507).

In this extract, which relates to Continental specimens, it will be seen that two important additions are made to our previous knowledge. *First*, that the Lizard Snake will devour the Blindworms as well as Lizards; and, *secondly*, that it will occasionally involve its victim in its crushing folds, after the manner so common among the larger ophidians.

Schlegel informed us that the Lizard Snake is viviparous, the eggs taking three or four months to hatch inside the mother; and that in August she brings forth eight or ten living young ones, which are at first perfectly white. In the 'Field' for October, 1862, Mr. Buckland records the parturition of a female captured in the New Forest, and gives details of the little family which leave nothing to be desired.

"The old mother snake is coiled up in a graceful combination of circles; her little family are nestled together on her back; they have twisted their tiny bodies together into a shape somewhat resembling a double figure of 8, and there they lie basking at their ease in the midday sun; the old mother is vibrating her forked tongue at me; the little ones are imitating their mother's actions, and are vibrating their tiny tongues also; the mamma's head is most beautifully iridescent in the sun, and her babies are in this respect nearly as pretty as their mother: they are about five inches long, about as thick as a small goose-quill, and smoother than the finest velvet; their eyes are like their mother's, their tails are unlike their mother's; she has lost the tip of her tail, her young ones have not—they are tapered off to a point as sharp as a pin. Their skins are of a brownish black colour, and marked like their mother's, only that these markings are not yet well developed; the scales on the under parts of their bodies are of a beautiful pale glittering blue; altogether they are real little beauties." —*Frank Buckland, in 'Field,' October*, 1862.

In order to complete my account of this interesting species, it is necessary to say something of its mode of ecdysis or sloughing; and here I am again fortunate in having Mr. Spicer's translation of Dr. Opel's observations before me, so that we have now as satisfactory a life-history of this comparatively new species as of either of the reptiles that have been familiar to us from childhood.

"The ground colour of this animal was of the yellowish hue which usually precedes the casting of the skin: that process accordingly began within four days, but went on so slowly that more than once I assisted nature by removing the epidermis with a pair of pincers. From memoranda made at the time, I find that the colouring of the new skin was by no means so bright and fresh as usual; and I see in this circumstance a confirmation of an opinion, which I have elsewhere expressed, that the pigment layer contributes largely towards the formation of the epidermis, and is itself renewed from within; for my snake not having touched food for a long time previous to its sloughing, it follows that the vital operations were weak, and the secretion of pigment weak in proportion; hence the dullness of the colours beneath the epidermis. Hybernation interrupted the casting of skin that should have followed, and it was not until the 18th of June of the ensuing year (1858) that the process occurred again; but this time it was both easier and quicker, the whole being finished by the 20th of the same month, as I had taken the precaution of having a number of rough objects placed in the cage for the animal to rub itself against. I should mention that the cage in which the Coronella was confined was provided with glass sides and bottom, so that all its movements could be carefully observed without the animal itself being disturbed. A third sloughing (the second of this year) took place on the 2nd of July, the Coronella having repeatedly taken food a fortnight previously. This time I allowed the animal a certain amount of freedom, having turned it loose in my study to see if the process would be thereby facilitated. I noticed that it took advantage of every rough spot it could reach to rid itself (by rubbing) of the dried integuments with which it was encumbered. When about half the body was freed, I observed it creep rapidly on to the support of a small round table, and then, insinuating itself with much exertion into the interstices of the wooden arched foot, in an instant it left its epidermis hanging in the narrow space. The whole affair, from the first splitting of the skin on the head to a complete renewal, occupied just three hours and a half. Owing to the continuous friction the cast skin was torn in several places, whereas, in the previous instances, it had come off entire. The last sloughing commenced on the 14th of August, and proceeded just as quickly; indeed, the animal became more than usually brisk after it, for it swallowed a small lizard the same day, and another larger one two days after." (Zool. 9506.)

Family VIPERS (*Viperidæ*).

Have no maxillary teeth in the upper jaw, but a single row of very small palatal teeth on each side of the palate, and in addition to them there is articulated to each ramus of the upper jaw a small but distinct supplementary bone, which bears an elongate and curved tubular poison-tooth or fang. There is no pit or depression on the side of the face, as in the family of Rattle-Snakes (*Crotalidæ*). We have but one British species,

The VIPER (*Pelias Berus*).

Common Viper, Adder, Common Adder: varieties as regards colour are also called Red Viper, Blue-bellied Viper, Black Viper, Chersea Viper.

The Viper being the only British representative of the family Viperidæ, a considerable amount of repetition becomes necessary in compiling the description, since the characters of the species must of necessity be those of the family. The head is flattened on the crown, and considerably dilated behind the eyes: the gape extends the entire length of the head. I have found no teeth inserted in the maxillary bones of the upper jaw, but there is a single row of very small sharp-pointed teeth on each side of the palate; and also a single series of ten or twelve teeth, sharp-pointed and bent backwards towards the throat, on each side of the lower jaw. In addition to these there is a single tubular tooth, or poison-fang, on each side of the upper jaw: this is not absolutely fixed in the maxillary bone itself, but in a small separate or supplementary bone which is articulated to the maxillary bone, and the muscles attached to it are so formed and arranged that the fang, at the will of the animal, can either be projected at a right angle with the maxillary bone, or entirely concealed among the folds of integument within the mouth. The neck is manifestly restricted, but scarcely so much so as in the Common Snake; the body gradually increases in size to the middle, and is of nearly uniform diameter thence to the vent, from which point it rapidly and rather suddenly tapers, and terminates in a pointed tail: the dorsal and lateral scutes are keeled, and form eighteen longitudinal series. The ventral scutes vary in number: in five specimens, counted with the greatest possible care, there were found to be respectively 146, 148, 156, 156 and 178; the numbers of subcaudal scutes in the same specimens were 28, 28, 29, 33 and 34 pairs. In Partington's 'British Cyclopedia' (1837) the ventral plates are said to vary in number from 144 to 177, and the caudal plates from 29 to 68. Professor Bell (1849), Lord Clermont (1859), and Mr. Cooke ('Our British Reptiles,' 1865), agree in stating the number of ventral scutes to be "about 140 to 150, and the subcaudal scutes about thirty-five pairs."

The ground colour is very variable: I have killed vipers in which it was putty-coloured, ochreous-yellow, brick-dust-red, umber-brown, and dull black. Probably this variation in ground colour is due in a degree to the age of the skin, or, in other words, to the greater or less length of time that has elapsed since the last ecdysis or moult—a contingency not sufficiently appreciated by naturalists who, having a dead viper of somewhat abnormal colouring brought to them, at once proceed to describe it as a variety or even as a species. Those who have observed a viper in captivity, particularly before and after an ecdysis, must have been struck with the altered tint and greater brilliancy of markings immediately after the completion of that event. But whatever the ground colour, there is almost invariably a dark brown, medio-dorsal, sinuous stripe commencing behind the head, and nearly reaching the tail, where it becomes broken up into spots or blotches. Sometimes this stripe is interrupted throughout its course, and its place occupied by a series of trapeziform blotches connected together by a mere thread of the same dark colour; and sometimes again, although very rarely, this connecting thread is wanting and the stripe is replaced by a series of black spots or blotches: on each side of the body there is also a row of nearly circular black spots, and on the crown of the head is a single black blotch, always separate from the medio-dorsal stripe and divided posteriorly in the form of a letter V, so as to include the anterior extremity of the said stripe: the scutes covering the margin of the upper jaw are whitish and generally four in number; those on the margin of the lower jaw are yellowish, smaller and seven or eight in number.

The average length of a viper is two feet; the females are longer than the males, and when pregnant very much stouter: I have rarely seen a viper much exceeding the length I have mentioned, and those which are shorter are generally young and immature

The viper produces its young alive, and although there is an investing, flexible pellicle to each, somewhat analogous to that found in the egg of the domestic fowl within the calcareous shell, yet this is ruptured and disappears before the act of parturition; and the young, even before that event, have acquired all the powers essential to self-preservation. The viper seems to be at enmity with all the world, and all the world at enmity with it; and it is so with the young: they are quite ready to do battle with all comers on their very first appearance on the stage of life. It is no uncommon event for the gravid female to be slain, for it is her pleasure when in this condition to lie coiled up on some soft mossy bank exposed to the direct rays of the sun, and perfectly motionless, so that she becomes an easy victim: her death is always a violent one; repeated blows with the stoutest stake that can be found effect this object; and the violence used very commonly causes the expulsion of the young,—sometimes through the natural aditus, but more generally through the ruptured cuticle of the belly. Immediately on liberation, the little ones erect their heads, hiss, vibrate their tongues, and exhibit every possible evidence of hostility, proving that their energetic ideas of self-preservation are instinctive rather than educational. Philosophers have suggested that the apparent lethargy of the pregnant viper, and disposition to avail herself of the solar heat, is also a natural instinct, and intended for maturing the young prior to extrusion. Be that as it may, the fact, when observed for the first time by those who can read and write, always insures a faithful record: we are a wonder-loving people: the event is handed to the reading public in this stereotyped fashion. "*Viper swallowing her young.*—On Saturday last I killed a *remarkably large* female viper—newspaper vipers, or other specimens of nature, are invariably *remarkably large* or *remarkably fine*—by repeated blows with a hedge-stake which was fortunately at hand; but the strange part of the affair is this, that while I was belabouring the reptile with all my might, I distinctly saw two young ones which had taken refuge in her mouth, come out and wriggle away among the short grass: that there could have been no mistake about the matter is proved by the fact, that I afterwards opened the dead parent and took eight more living young ones out of her stomach, and have them now in spirit for the satisfaction of the incredulous.—ONE WHO KNOWS." A great deal of correspondence took place in the 'Field' and 'Gardener's Chronicle' newspapers on this subject; "Protestant Governesses," "Country Clergymen," "Constant Readers," "Justices of the Peace," Old Subscribers," &c., confidently recording similar experiences; Naturalists possessing more distinctive names, as confidently arguing that there was some mistake or imperfection in the observation. The controversy waxed warmer and warmer; experiences more and more frequent; details more and more minute; denials more and more positive; until Mr. Buckland deposited two sovereigns at the 'Field' office as the reward for any one who would bring to that office a female viper with the young ones still in her stomach. The viper was to be killed after having been seen, like Saturn of old, to swallow her own progeny; and her neck was then to be tightly tied round with a string. Some three years or more have elapsed since the offer was publicly advertised, but no claimant for the sovereigns has appeared; indeed, immediately on the offer being made public, the subject was dropped and has never since been revived.

The viper feeds almost exclusively on field mice, shrews, voles and moles; the last dish I take rather on trust, never having found any portion of this rather bulky vermivore in the stomach of a viper.

It seems scarcely right to conclude my account of the viper without saying something more about its venomous property, and supposed death-dispensing propensity; my own view of the subject is probably unique, and amounts to what is usually called a crotchet: it may be briefly stated thus, "that the object of the poison possessed by this family of ophidians is simply to numb or kill the prey, which is always living when captured." It is, I think, universally believed that this weapon, if I may so call it, is one of offence or defence as regards man or the larger animals; but if we consider the fearless manner in which eagles, buzzards, secretaries and falcons make the poisonous snakes their favourite prey, and that they have never been known to receive injury from the fangs of these creatures, it must be clear that as a means of defence the poison is perfectly *effête*. There also seems some difficulty in reconciling the account we read of the sidelong blows given by the viper with our precise knowledge of the position and structure of its poison-fangs; but this is a difficulty I am unable to solve: the following memorandum by an old correspondent of the 'Zoologist,' if not conclusive, is, to say the least, most interesting and suggestive.

"When a viper is struck it first coils itself up, leaving its head in the centre or at the summit of the coil, and drawn a little back, as if for the purpose of reconnoitering. Speedily the animal uncoils itself like a spring; its body is then launched out with such rapidity that for a moment the eye cannot follow it: in this movement the viper clears a space nearly equal to its own length; but it never leaves the ground, where it remains supported on its tail or posterior portion of the body, ready to coil itself up again and aim afresh a second blow, if the first should fail. To do this the viper distends its mouth, draws back its fangs, arranges them in the right direction, and then plunges them into its enemy by a blow of the head or upper jaw: this done, the fangs are withdrawn. The lower jaw, which is closed at the same moment, serves as a point of resistance and favours the entrance of the poison-fangs; but this assistance is very slight, and the reptile acts by striking rather than biting. There are times, however, when the viper bites without coiling itself up and then darting forth; this occurs, for instance, when it meets with some small animal, which it destroys at leisure and without anger, or when it is seized by the tail or middle of the body, in which case it turns round and plunges in its fangs. As the teeth are buried in the tissues of the body struck, the poison is driven down the canals which pass through them by the action of the muscles which close the mouth, and the injection takes place with a force proportionate to the vigour and rage of the reptile, and the supply of poison with which it is furnished."—*Moquin Tandon's Zoologie Medicale, as translated by Mr. Cooke in 'Our British Reptiles.'*

The poison, which is a pale straw-colour and liquid,—something like what we should imagine fluid amber,—is without taste or smell, and, by repeated experiments on men and animals, has been proved perfectly innocuous when taken into the stomach: it is secreted in a spongy gland situated below the ear, or rather below the usual site of the auditory organ, for there is really no proper ear: the poison passes forwards along a tube concealed in the muscle of the jaw, until it reaches the base of the fang; it then descends through the fang with the action of biting, and of course enters the object bitten. A great deal has been written on the effect of temperature in increasing or diminishing the virulence of the poison, but, so far as I have been able to discover, the experiments have proved little or nothing: it seems clearly established that the supply of poison is limited; that after the first discharge the effect is greatly reduced, and that the creature may, by continued irritation, be induced to repeat its bites until the poison is exhausted and the bite become perfectly innocuous.

Like the Common Snake, the Viper becomes torpid in winter; it has frequently happened that a little company of these reptiles—ten, twenty or even more—have been found coiled up together in a strange mass in the hollow of a pollard willow, oak or hornbeam: they appear entirely lifeless until the increased temperature of spring arouses them from their sleep, and the cravings of appetite remind them that months have been passed without food. During the winter that is even now scarcely passed away, snakes, blind-worms and vipers have revived and come abroad in January and February, influenced no doubt by the unusually high temperature of those two months. Like the wood-pigeon, the viper has increased in number with the destruction of birds of prey, and in some parts of Scotland has become a dangerous nuisance; for although the bite is rarely fatal, except to the animals on which the viper feeds, its effect is always injurious, producing pain, fever, vomiting, and swelling of the bitten part.

EDWARD NEWMAN.

(To be continued.)

PS.—*Lacerta agilis sometimes Oviparous.*—I see in the 'Zoologist' you attach but little importance to the fact that Lacerta agilis is stated to be ovo-viviparous (S.S. 1627). It may be interesting to you to know that Mr. George Verrall, of Lewes, had some in captivity—I think it was in 1867—and that he particularly drew my attention to the fact, that the females produced *eggs*, and I certainly saw some at his house: the young, at the time I examined the eggs, were evidently about to be extruded, as the movements of the little creatures were plainly visible through the investing membrane; it therefore appears that the eggs are not *always* matured in the ovary of the female before extrusion.—*J. Jenner Weir; 6, Haddo Villas, Blackheath, S.E., April* 5, 1869.

[Two other communications from naturalists in Surrey and Kent respectively are precisely to the same effect as Mr. Weir's: but not having been printed at the time, and one of the observers (the late J. D. Salmon) being no more, I believed it best to pass them without notice until the receipt of Mr. Weir's note: in all three instances the writers refer to Lacerta agilis and not L. Stirpium. It remains to be seen whether L. Stirpium is sometimes viviparous or ovo-viviparous. In any case the employment of this physiological character as either generic or specific must henceforth be abandoned.—*Edward Newman.*]

Ornithological Notes from North Lincolnshire.

(Continued from Zool. S. S. 1544.)

JANUARY, 1869.

Kingfisher.—January 5. The stomach of a kingfisher, the muscular coat of which is very thin, dissected to-day, was crammed with very sharp needle-like bones of some small species of fish.

Teal.—January 20. A teal drake shot to-day on the stream had acquired the full mature plumage.

Wigeon.—January 23. The males of this beautiful species are now in full plumage. On the 27th there was a flock of forty off the mouth of our creek, all full-plumaged males. On the 15th February a large flock, seen near the same place, was composed of males and females, swimming together in pairs. Wigeon may be readily distinguished, even at great distances, from other ducks frequenting this coast, as they look—like the traditional pirate craft of the novelist—long and low in the water. On the 10th of March, I was amused in watching a flock of these ducks from the bank with my telescope: the tide was rising rapidly, and had already reached the embankment; the ducks were drifting in with it, every bird (thirty-three in number) asleep, their bills tucked beneath the scapulars; nearer and nearer they drifted—now almost within shot. I had laid down my telescope, and taken up my breech-loader, in expectation of a double shot; ten yards nearer, and I knew that at least two were doomed. Just too soon an old drake raised his head—I am certain he could not see me, and the wind was blowing towards the coast, yet evidently something was wrong; perhaps it was the nearness of the shore that alarmed him; be that as it may, the cautious bird instantly, in some way or other, communicated his fears to the rest—every head was raised, and each duck was paddling for dear life rapidly seawards: had they seen but the tip of my cap, every duck would have instantly risen, and not have trusted to swimming.

Partridge.—I have known partridges pair earlier than has been the case this season: on the 25th, although some had paired, many large coveys were unbroken; pairing was not general before the first week in February.

Wood Pigeon.—There are three acres of cabbages close to a plantation about a mile from this place, completely destroyed by these birds; every portion of the leaf is eaten except the central midrib and some of the strong sideribs: the plants look as if riddled by caterpillars. The almost total loss of the Swede crop has probably induced these birds to levy contributions on the cabbage-fields. The increase during the last twenty-five years of this species in North Lincolnshire is remarkable; it is certainly not consequent on any increase of plantations, or through waste land brought under cultivation, little or no change in either respect having taken place; their present abundance is attributable, I fully believe, to one circumstance alone —the all but total destruction of the falcons and hawks. When will our game preservers, and their ignorant keepers, learn common sense, and understand that falcons and hawks are not incompatible with abundance of game? The wood pigeon was the natural food of the falcon, and much more likely to be stricken than either pheasant or partridge. Now, thanks to the extermination of the birds of prey, the ring dove—to say nothing of the injury done to the farmer—consumes an immense amount of food which would otherwise go into the crop of game birds. I have sometimes thought that in this district, at least, where game is not as a rule artificially reared and fed, as the wood pigeon increased the flying game has decreased: I know, too, that late in the season, when birds are wild, that both in cover and turnip-field the sudden rise of a flock of wood pigeon will disturb all the game in the neighbourhood. Restore our falcons and harriers, and we shall then probably not hear so much of that bane of the moor-shooter — the dreaded grouse disease. I was much struck lately by the remarks of a writer in one of the monthly magazines;* speaking of the grouse disease, he writes—"I still, however, most honestly believe that the wholesale destruction of the birds of prey, especially of the peregrine falcon, has been a great curse—not at all because she prevented overstocking, for man can prevent that with his gun, but from the circumstance that hawks take the weakly and diseased birds first, simply because they can catch them easily. Nature knew that, in her own course, diseases would come; she knew also that, to prevent them spreading, they must be stamped out; and she sent her falcons on the moors: her armed cruisers sailed out to sweep the seas of the pirates that infested them; but man knew better—he looked only at the good of the moment—he defied her laws, and broke her balance altogether." And so, undoubtedly, in the case of the wood pigeon. Man has destroyed the balance, not alone to the injury of the agriculturist, but doubtless, as it will some day or other be found, to the disadvantage of the game preserver.

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* 'Saint Paul's Magazine,' June, 1868.

Stock Dove.—This species is of very rare occurrence in North Lincolnshire: I have on several occasions lately seen five feeding in the stubble-fields in the marshes; they are excessively wild and wary, much more so than the ring dove. On the wing their flight and appearance is much the same as in the common domestic bird.

Goldeneye.—January 26. There was a beautiful old male goldeneye off the mouth of the creek to-day; I watched him for nearly an hour through the telescope; this duck swims rather high in the water: it was constantly diving, keeping beneath, on the average, till I could count slowly to forty-eight, and not remaining on the surface between each dive longer than counting to twelve—consequently spent four-fifths of its time under water.

Ice Duck (Fuligula glacialis).—The stomach of this duck, sent to me by Mr. J. H. Gurney, jun., contains a considerable quantity of small shells of the genus Buccinum, and a few Patella pellucida, also the remains of shrimps.

FEBRUARY.

February 1. Chaffinch, yellow bunting and greenfinch paired.

February 2. Spring note of blue tit.

Scaup Duck (Fuligula marila).—February 10. Have lately noticed small flocks of these ducks on the coast: one to-day, off the mouth of the creek, numbered fourteen birds—seven males and seven females, all in mature plumage. These ducks swim high in the water, are expert divers, remaining underneath longer even than the goldeneye, and I have frequently counted fifty to fifty-four from the dive to the reappearance. Lately, on several occasions, I have seen three come at high-water close in shore, diving in very shallow water; they daily come up with the tide near the same place; one is in the plumage of the mature female, the others are young males in the transition dress, changing from the female garb of the first summer to the male of the second: they have a curious mottled and nondescript appearance.

Dunlin.—February 15. An immense flock of dunlin on the "Flats" this afternoon, probably not less than ten thousand birds.

Brownheaded Gull.—February 25. Have in a few instances acquired the brown summer cap.

MARCH.

Golden Plover.—March 2. Examined through the telescope, at the distance of about 300 yards, a flock of golden plover; already several show indications of a change to the summer plumage: six are much marked on the under parts with black, in the proportion of two parts black to one white, and one bird is all but in full summer plumage.

Pied Wagtail.—March 6. First seen, several observed; have not, as is now usually the case, seen any during the winter.

Fieldfare.—March 9. Several flocks in the marshes; they are feeding on the haws, which, thanks to the mild winter, are still plentiful on the hedgerows.

White Wagtail (M. alba).—I have remarked in previous numbers of the 'Zoologist,' on the occasional appearance of this continental species in North Lincolnshire. The last noted was on the 5th of May, 1866 (Zool., N.S., 295). On the 23rd of this month I was talking to a brickmaker, who has a yard on the Humber fitties, when a white wagtail alighted within fifteen yards—curiously enough it was close to the place where I had seen the bird already recorded in the 'Zoologist.' I had a very perfect view of the little fellow as he sat perched on the flats on a sod of Armeria maritima, broken by the waves from the fitties—his black cap contrasting strongly with the very light pearl-gray back; there is also much more white on the sides of the neck and flanks than is seen in M. Yarrellii—it is altogether a whiter, more delicate and graceful bird: when once seen, it may readily be distinguished from either the male or female of the pied species, even on the wing and at some distance. I was surprised to find that the brickmaker, who is both a good observer and a famous wild-fowl shooter, was aware of the difference between these two species: he has sometimes in the spring seen the "light-coloured sort" about his yard, but considered it very rare. Anxious to procure a specimen I fired at short range, but, having only large shot, failed; I spent an hour searching the fitties for my bird without success. In the brick-pit were two pied wagtails, male and female, which I watched within a few yards; seeing these so soon afterwards made the difference between the two species more striking. I was not aware, previous to reading Mr. Stevenson's * remarks on this species, that it was so rare a bird in eastern England: that it may *occasionally* at this season be found on our coast I am certain, and I trust ere long to obtain specimens.

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* 'Birds of Norfolk,' vol. i., p. 163.

JOHN CORDEAUX.

March 31, 1869.

Errata.—In "Ornithological Notes from North Lincolnshire" (Zool. S. S. 1543), paragraph "Woodcock," line two, *for* "heard of them" *read* "heard of *three.*" In "Notes on Bird Parasites" (S. S. 1587), lines three and four, *for* "ten sharp crooked claws" *read* "*two* sharp crooked claws."—*J. C.*

Ornithological Notes from Pembrokeshire.

By THOMAS DIX, Esq.

(Continued from Zool. S. S. 140).

Peregrine Falcon.—This bird still breeds on the coast between Tenby and St. David's. I have not been so fortunate as to see the species, but my friend H. F. Bailey saw an adult bird last June by the Stack Rocks at Flimstone, near Pembroke, and Mr. Tracy of that place (to whom I am greatly indebted for information respecting the birds of his district) tells me two or three pairs still breed between Caldy Island and Milford Haven: two or three years since a nest of four young ones was taken near the Stacks by a party of eggers. Some twenty years ago this bird must have been exceedingly numerous on this coast: Mr. Tracy says—"From Caldy Island round to St. David's as many as twelve pairs could be counted during the months of May and June; they generally fix upon a situation for their nests in March, and lay in April—mostly in the old nest of a raven or crow, selecting the most inaccessible places on the cliffs; there are generally four or five eggs: in one instance I saw six young birds." Perhaps I should have begun this list with the Greenland falcon, as the bird figured in Yarrell as the gyr falcon was killed on Stackpole Warren, by the father of Mr. Tracy, of Pembroke.

Merlin.—An autumn and winter visitor, when it is not uncommon, particularly in the lower part of the county: immature birds are the most numerous.

Sparrow Hawk.—A young male was brought me in September, 1867, in singular plumage; I thought at first sight it was a young merlin: the back and upper parts are dark liver-brown, each feather edged with light reddish brown; throat light fawn-colour, with slight longitudinal dark lines; breast and flanks pale reddish fawn, with triangular patches of reddish brown, giving the appearance of broad longitudinal markings; thighs with transverse and longitudinal markings of light brown; irides yellow.

Kite.—A fine bird, in the Earl of Cawdor's collection at Stackpole Court, is said to have been killed in Carmarthenshire: I believe it has been taken in Pembrokeshire.

Buzzard.—In May, 1866, I had the unexpected pleasure of seeing a pair at Llangranog, on the Cardiganshire coast, where I have no doubt they had a nest; I was first struck by their peculiar, plaintive note, greatly resembling the mewing of a kitten. Never having seen this bird on the wing before, and they being some 300 feet above me, I was some time before I could be sure of the species: they were mobbed by several crows and jackdaws; as they wheeled and doubled about, their rounded wings gave them a very unhawk-like appearance: I was glad to find they had selected so safe a nesting-place, it being a shelving rock overgrown with ferns and grass.

Marsh Harrier.—A fine specimen in the plumage of the first year, in the Earl of Cawdor's collection, is said to have been killed near Stackpole Court.

Hen Harrier.—A pair were killed near Troed-y-rawr, Cardiganshire, in the spring of 1868; from the description given of the male he must have been in adult plumage. Like many another rarity which would rejoice the heart of a naturalist, he was destroyed. I am sorry to say the nest was taken about the same time, and the female killed.

Scops Eared Owl.—A beautiful specimen was caught by a labouring man, near Pembroke, last spring: he was trimming a hedge at the time, when it fluttered out from the bottom: I saw it in Mr. Tracy's shop, but unfortunately he took no note of the sex or when it was taken to him.

Pied Flycatcher.—Specimens in the collection at Stackpole Court (Mr. Tracy tells me) were killed in the neighbourhood, also that the bird is occasionally seen in the spring and autumn.

Ring Ouzel.—Although I have not seen this bird, I have every reason to believe it breeds (occasionally, at least) in this district. My young friend, Arthur Phillips, of Newcastle Emlyn, took some eggs in 1867, when he distinctly saw the bird leave the nest.

Redstart.—The first time I noticed this bird was in the summer of 1866—a pair had a nest in an old bee-house at Kilwendeage: they reared their young, and I believe returned the following summer, as another lot of young ones were reared in the same hole in the wall. Last season a pair of great tits took possession, or I think there would have been a third lot, as I noticed a pair of redstarts about the place for several days; a pair, however, reared their young in the gardens —they appropriated the hole in a wall, where a pair of pied wagtails had just reared their brood: they began building upon the old nest of the wagtails the very day the latter left it. This species is not at all numerous—I have only seen three birds besides those that bred at Kilwendeage: the men working in the gardens had never seen any before.

Black Redstart.—Mr. Tracy tells me this may be considered almost a regular visitor, as nearly every year he sees it in Pembroke, generally about the old castle: the first he noticed was in October, 1847, when he shot a female in the street close to his house: this bird is, I believe, in the Stackpole Court collection. The same week he received another bird from Tenby, which was killed on the Coburg Hotel.

Whinchat.—This bird is decidedly rare in this district: in June, 1867, I saw one pair—the only time I have seen the species.

Wheatear.—I was agreeably surprised to find this bird breeding about the north-eastern portion of the Precelly Mountains: having been told various tales respecting the birds to be found there, I was anxious to see for myself, and, in company with Mr. Phillips, of Newcastle Emlyn, I started for the purpose on the 20th of June last year; the morning looked far from promising—it was a thick fog, nearly as bad as rain, but we determined on trying: we had about seven miles to drive to our starting point; by the time we reached it the fog was gone, and the weather was all we could wish. At Carn-Menin we began our walk by crossing a peat bog, upon which large boulders cropped out: here I first saw some wheatears, evidently a family party; there were also a few meadow pipits, and just below the rocks which give the name to the place two carrion crows were looking for food. The rock here is very peculiar—it is in large detached masses, riven and piled much like a rubbish-heap of a large quarry: many of the blocks are balanced so that they can be easily rocked, and when struck give a ringing sound. In walking to the rocks west of Voeltrigarn—I believe called Carn-alw, which, according to Mr. Phillips, means "The Rock of Calling," probably from there being an echo there—we found Lycopodium clavatum common, and about a dozen plants of L. Selago; in the bog in the direction of

Voeltrigarn sundew was growing in the greatest profusion: here we found the remains of a young common snipe about half fledged, but saw no old birds; three herring gulls and one lesser blackbacked gull were on the bog, but very shy—I was, however, able to distinguish the species: they are said to return to the coast every evening, which is only about five miles as they would go. I thought we should have found more species of birds, and so far was disappointed, but we gained information only to be had by such a walk,—and many, if not all who take the trouble to see for themselves, have experienced the like. The hen harrier I have no doubt bred on these mountains a few years since, as an old man very correctly described the bird to me; he lives near, and says now and then one comes in the winter; the Welsh name means, "the whitetailed hen of the mountains." Thirty years since the buzzard is also said to have been common. "Boncath" is the Welsh name for this bird, and close to this place is a little village of that name: as the names of Welsh places are generally derived from something particular in connexion with them, may we not take it as a corroboration of the statement made to me.

Grasshopper Warbler.—The first time I heard this bird in Wales was one afternoon in July, 1866—it was just within Carmarthenshire, in a boggy place overgrown with alder and rushes; since then I have heard the bird near Whitechurch, in a similar locality. Last year two males came for a few evenings in July close to this house; they were in two small clumps of blackthorn about forty yards from each other; they begin their peculiar whirring note about dusk, when I have stood within a few feet of them without their being the least disturbed.

Sedge Warbler.—As far as I am able to judge, this bird is generally distributed in the low lying localities, but nowhere numerous.

Bohemian Waxwing.—I am informed by my friend Mr. J. Phillips, of Newcastle Emlyn, that a single bird of this species was shot a few years since near Llandyssil, in Carmarthenshire.

Pied Wagtail.—Every autumn we see flocks, which stay a few days as they pass south; I particularly noted about fifty on the 16th of September, 1866; they remained about ten days, and kept very much together during their stay: this year, on the 22nd of March, I saw nine in fine summer plumage—they were all males; when I disturbed them they rose up nearly out of sight, and went off in a northeasterly direction.

Ray's Wagtail.—I have only once been able to identify this bird in this district, when five were seen on the 24th of August, 1867.

Mr. Tracy, of Pembroke, says they are regular spring and autumn migrants, only staying a few days.

Rock Pipit.—Common on the coast, where it breeds: I shot a young bird in full plumage early in May, 1866.

Common Bunting.—Since sending my previous notes (S.S. 137), I have had reason to somewhat alter my opinion as regards this species—it certainly appears to be more numerous than I previously believed: as I was driving over the mountains to Narberth last February I counted five on one bush, and saw at least a dozen others.

Blackheaded Bunting.—By no means common; a few are seen by the rivers in suitable localities.

Chaffinch.—During the severe weather in January, 1867, several were frozen to death: on the night of the 14th the thermometer fell to five degrees below zero; the next morning four of these birds were brought to me quite dead and stiff—all of them had their heads under their wings, as though they died asleep; doubtless starvation had something to do with it, but I am persuaded the cold killed them. The 30th of October following I saw the largest flock I ever noticed—there must have been five or six hundred birds; they were in a small field close to the mountains; I watched them for some time without seeing a single bird of any other species.

Crossbill.—During last autumn a few were seen in the lower part of the county; I heard three were killed near Stackpole Court.

Chough.—This bird may still be considered common round the rocky coast of Pembroke and Cardigan: they build in the most inaccessible parts of the cliffs, generally in the clefts of overhanging rocks, where it is impossible to get at their nests.

Raven.—Breeds on the rocky parts of the coast, where it is common.

Carrion Crow.—I mention this bird, as I believe some naturalists have an idea they—occasionally, at least—associate with rooks: they are very common in this district, and I have taken some pains to observe their habits: it is seldom that more than two are seen together, generally not far from the side of a wood, and it has struck me they prefer being alone; in only one instance have I seen the two species together, when a herring gull, a rook, and two crows were feeding off a dead sheep. Twelve months since a pair regularly roosted in a small plantation adjoining this house; they built and reared four young, and the family party were constantly seen in company until the young were able to provide for themselves. I have often disturbed crows of an evening when walking through plantations, and I have reason to believe they mostly return to the same place to roost. I quite admit it is difficult to distinguish the two species at a distance, but the shorter and thicker look of the crow will not often mislead. I am greatly inclined to think the crows we hear of as being killed in rookeries are in reality rooks of the year that still retain their beards —and that keeper would be in advance of his brethren who could distinguish the difference between the species: having once said they have shot a crow they stick to it, for the same reason as the tailor who having given evidence that a certain horse was sixteen yards high—when corrected, replied "I swore to it, and I stand to it."

Hoopoe.—I see by Mr. Tracy's notes this bird has been obtained in the neighbourhood of Pembroke: one was taken on the 17th of March, 1847, at St. Twynell's; it had been seen about for several days, and was at last caught in a cottage: another was taken on board the Waterford steamer, at the mouth of Milford Haven, about the same time; and, in 1850, one was obtained near St. David's, also in March.

Bee-eater.—A specimen which I saw in Mr. Tracy's shop was killed near Pembroke; it was too much injured to tell if it was an old or young bird.

Kingfisher.—Certainly a rare bird in this immediate neighbourhood, but they are oftener met with in the lower part of the county, where they also breed.

Swift.—In certain localities these birds are numerous; I have seen considerable numbers about Kilgerran and Pembroke castles. I once saw a flock of about forty here; they were flying a few feet from the ground, and apparently took a straight line across the country,—they just rose at the banks as they sped onward in their race, for such it appeared.

Nightjar.—Not uncommon in favourable places; they prefer sheltered valleys, particularly where furze and heath are growing near plantations.

Turtle Dove.—This bird is only a straggler in this county; it has been known to breed in the woods at Orielton, near Pembroke, but I believe only on one occasion. On the 20th of June, 1867, I was surprised to see one fly across a small field here which was being sown with turnips: the same morning, within a less distance than a mile, I heard two others in different plantations; three pairs were regularly heard and seen here for about ten days; I was careful they should not be disturbed, as I hoped they would remain through the summer; however, they all left, and we have had none since: their note is so peculiar it is not easy to suppose they would remain unnoticed, more particularly as they were several times mentioned to me during the time they remained.

Ring Dove.—As in many other parts of the country, this bird is more numerous than it was in the southern parts of the county: few persons have any idea of the damage they do to turnips and rape during the winter months.

Quail.—An adult female was shot at Boncath, near here, on the 7th of September, 1867, and was sent to me a day or two afterwards; it was flushed from amongst some rushes in a wet springy meadow, where in winter we usually find snipes: this singularly agrees with the observations in the "Birds of Norfolk:" eight or nine years ago five were seen near here, of which three were shot; and about twelve years ago three were seen near Eglwyswrw, all of which were killed; they were all found in and near similar cover to the bird I have: I think I never saw a bird so loaded with fat as that sent me,—although rolled up in four or five thicknesses of newspaper, the grease went through all; the feathers were so saturated that I almost despaired of cleaning them.

Ringed Plover.—Where the coast is favourable for their breeding they are not uncommon, although I believe nowhere numerous.

Lapwing.—Breeds in few localities.

Sanderling.—I see by Mr. Tracy's notes that a female, killed on Newgall Sands on the 1st of June, 1857, had the ovaries well developed.

Oystercatcher.—Mr. Tracy tells me they breed plentifully from Freshwater Bay round to Angle, at the mouth of Milford Haven. I saw a bird on Cardigan Island in June, 1867.

Bittern.—I have heard of two or three which were killed in this neighbourhood.

Little Bittern.—A specimen in the Earl of Cawdor's collection was killed, I am informed, in Pembrokeshire.

Night Heron.—An immature specimen in the Stackpole Court collection was shot near Pembroke mill-pond, about twelve years since, by Mr. Tracy: within twenty yards of the same spot he shot another, which he sent me on the 7th of December last; it had been killed a few days, but as the body was sent with it, I was fortunately able to determine the sex—it proved to be a male; there is a single occipital plume about three inches long, white, tipped with dark brown; the back and wings are beautifully shot with olive-green; the white spots on the back and wing-coverts are more distinct and larger than shown in Yarrell's figure.

Spoonbill.—An immature specimen in Mr. Tracy's shop was killed near Pembroke in 1867, and he informs me two or three are seen almost every year: fourteen or fifteen years since, he had twelve taken to him in the course of a few months.

Glossy Ibis.—I see in Mr. Tracy's notes that an adult bird, in full plumage, was killed at Slebach in the autumn of 1834.

Curlew.—During the severe frost in January, 1867, five of these birds came to some catch meadows near this house; they were very watchful, but one was shot, which was in good condition: they are common on the coast.

Redshank.—Common about the mud-flats of Pembroke river.

Green Sandpiper.—Scarce, but a regular visitor to certain spots every August, but only remain a few days.

Common Sandpiper.—Said to breed here: I have no reason to suppose such is not the case, although I have not found the bird.

Greenshank.—Occasionally met with: Mr. Tracy has had several from the Pembroke river.

Avocet.—A beautiful specimen in the Earl of Cawdor's collection was killed near Pembroke.

Bartailed Godwit.—Not uncommon in the spring and autumn, particularly about the mouths of rivers, where there are large mud-flats at low tide.

Knot.—Mr. Tracy regularly meets with this bird during the winter in the neighbourhood of Pembroke.

Purple Sandpiper.—About as numerous as the knot, and found at the same time.

Water Rail.—Not often seen. Last December, as I was riding, a beautiful bird rose from the road-side ditch and perched on a willow-twig about two feet from the ground: although I was within a few yards it took no notice; the bright red beak and white bars of the flank feathers were very conspicuous.

Coot.—A regular winter visitant, but not numerous.

Gray Phalarope.—A specimen in the Earl of Cawdor's collection was, I believe, killed near Stackpole Court; and I learn from

Mr. J. H. Gurney's Occurrences of this species during the autumn of 1866,—that one was seen for several days at Caldy Island.

Common Shieldrake.—I believe that a pair or two still breed in the sand-hills to the south of Milford Haven; they are said to do so numerously in the sand-hills by Laugharne marsh, in Carmarthenshire.

Shoveller.—Occasionally obtained.

Gadwall.—Rarely seen; but one or two have been shot on the Pembroke river.

Eider Duck.—An adult male, which I believe was killed in Carmarthenshire, and an immature male near Pembroke, are in the collection at Stackpole Court.

Common Scoter.—Immature birds are not uncommon on the coast.

Redcrested Whistling Duck.—Mr. Tracy tells me he shot a female of this rare visitor at Stackpole, and that it was taken by the Earl of Cawdor to London to be identified—unfortunately he has forgotten the date.

Pochard.—Not uncommon: a single bird was shot here two years since; it was quite alone on a small pond.

Tufted Duck.—When wild ducks are particularly numerous, a few of these birds are generally to be seen.

Longtailed Duck.—Mr. Tracy showed me the notes he took of one killed near Haverfordwest, June 15th, 1843: with the exception of one white scapular feather and a few white feathers on the crown of the head and back of the neck, the bird appears to have been in full summer plumage; the white feathers remaining on the head and neck were about a quarter of an inch longer than the others.

Goldeneye.—A few are seen most winters, but adult males are very rare.

Smew.—A beautiful adult male in the Earl of Cawdor's collection was shot on the lake at Stackpole Court: immature birds are not unfrequently seen.

Redbreasted Merganser.—Occasionally obtained.

Goosander.—More numerous than the preceding.

Great Crested Grebe.—A few seen during the winter, but invariably in immature or winter plumage.

Rednecked Grebe.—Mr. Tracy assures me he has several times killed this bird on the mill-pond at Pembroke.

Sclavonian Grebe.—The same remark will apply to this species as to the great crested.

Eared Grebe.—Mr. Tracy says he has several times taken this bird on the Pembroke river.

Redthroated Diver.—Common during winter.

Great Northern Diver.—Not uncommon in Milford Haven.

Common Guillemot—The great breeding-place (at least, so far as I know the coast at present) is the Stack Rocks at Flimstone, about seven miles south-west of Pembroke; here they are to be seen in immense numbers; these Stacks are nearly on a level with the main land, and about sixty or seventy yards distant; the largest is perhaps thirty yards across, the other not half the size; the tops of these rocks are, in the breeding season, literally packed with guillemots. The first time I saw them was on a bright calm day in July: for a few moments I could not believe the brown and white moving mass before me were birds—it took time to accustom the eye to the sight, when I could easily distinguish them bowing and turning as they kept up a continual chatter; they were continually coming and going from and to the sea—it was curious to see them waddle to the edge and apparently tumble off head foremost, when they quickly gained the use of their wings. Now and then a herring gull sailed past, when it seemed as if each one was fearful for the safety of its egg, there being general bustle and an extra amount of noise. We hailed some men who were lobster catching, and, after some dumb show, my friend told me we must meet them at St. Catherine's point, for which we started: a pretty place this said point is to get down—limestone washed and honey-combed by the waves, as rough as coral, and almost as uneven; however, after scrambling down backwards and sideways, we came at last to the boat. Mr. Lewis, who lives close by, joined us; he knows the coast well, and was most acceptable company; he told the men to pull round to "the cave," and go through: a grand sight was before us as we rounded the point—an immense natural arch of limestone, with two or three small caves above it, in which were sitting some razorbills; to the right is a narrow passage, divided from the main arch by slight pillars; the razorbills came tumbling off their nests as we approached, and an egg fell into the water,—of course to be smashed. In a few moments we were through the arch, and the sky was seen through an opening fifteen to twenty yards square, and about two hundred feet above us; we might readily have fancied ourselves at the bottom of a well; a dozen kittiwakes had their nests mostly above, and behind as we entered; in front to the right is a real cave about ten feet wide, coming to a sharp point at the top: we could only see in a few feet as it was quite dark; several razorbills flew out; one bird had a young one only a few feet above the water,—she would not leave it, although we could have reached her with an oar. We left this place by a narrow opening opposite the entrance, and as we looked a-head we appeared to be going into an amphitheatre, for the cliffs in the distance form a small bay, and the side of the cave confined our view to the left: in the distance is the principal colony of kittiwakes—the whole face of the cliff seemed white with them: immediately we are out of the cave we are below another settlement; on the right, left, and in front are hundreds—every ledge is occupied; some of the nests are apparently stuck upon the face of the rock. What a beautiful sight to see these lovely little gulls, so light and airy in their flight, and in such pure unsullied plumage, which it is next to impossible to handle without soiling; we had a good look at them, as some were on their nests within a few feet apparently indifferent to our intrusion. We next went off to the Stacks, pulling between them and the main land: on the face of the cliffs, wherever they can find standing room, were sitting great numbers of razorbills and guillemots, and we saw perhaps half-a-dozen puffins; the few ledges on the sides of the Stacks were occupied in like manner. On the west side of the Great Stack is a cave in which shags breed in safety—it is perfectly inaccessible: having rounded the Stacks, we had a splendid view of the tops which slope towards the sea—they were covered with thousands of guillemots; numerous as they appeared from the land, it was as nothing compared to this view; no words can describe the scene, and we were particularly fortunate to have had such a good opportunity for witnessing it—a calm sea and a boat within hail we might go twenty times and not meet again; there was only one drawback, we could only have half an hour in the boat, when a whole day would not have been too long; but the sailors were anxious to be off to Tenby, and, having obliged us so far, we could not grumble, short though the time seemed. I can fairly say it has left an impression which I can never forget, and often recur to with the greatest pleasure. I drove to the Stacks again on the 5th of September: it was a windy, stormy day—the wind blowing off the sea; not a single guillemot was upon the top of the Stacks, and only here and there in sheltered nooks might be seen a few with some razorbills, but the air seemed full of them flying in all directions, chattering and screaming: the sea was very rough, but covered with birds riding head to wind, light as corks and as unconcerned, although almost within reach of the breakers; in one little inlet I thought I saw two or three dead ones, possibly killed by the storm.

Ringed Guillemot.—I could not distinguish this bird at the Stacks, but I am assured it has been obtained on the coast during the breeding season.

Puffin.—Common all round the coast—it seems to prefer the islands: on Caldy Island it breeds in great numbers, and I am sorry to say that on Whit Monday the boys and men of Tenby slaughtered them by wholesale; it is as much an institution with them as May-day with the sweeps. I found this bird breeding on Cardigan Island: with the exception of the herring gull, I believe it is the only sea-bird breeding there.

Razorbill.—Breeds wherever the guillemots have a station, but I believe they generally select the lower ledges of rock.

Cormorant.—Not uncommon, but not so numerous as the next species.

Shag.—Generally distributed along the coast: I am told the principal breeding places are the Islands—Ramsey, Skomer and Skokhum. I have several times seen shags fly over here in a straight line for Cardigan Bay; there is no river or any inland water in the direction they came from, so that I am inclined to think they must have crossed from Carmarthen Bay.

Kittiwake.—I have before mentioned this little gull breeds in great numbers at Flimstone: they keep mostly by themselves.

Lesser Blackbacked Gull.—This bird is by no means numerous.

Herring Gull.—Common all round the coast.

Manx Shearwater.—Common; numbers breed at Caldy Island, and also upon Skomer and Skokhum: they select deserted rabbit-holes, which they seldom leave before dusk, and therefore escape the notice of the casual observer.

Forktailed Petrel.—Has several times been taken after severe storms at Milford Haven; I saw a specimen in Mr. Tracy's shop, taken near Pembroke.

THOMAS DIX.

Llwynbedw, Kenarth, Llandyssil.

Otter near Wakefield.—About the 3rd of February an adult otter, weighing twenty-three pounds, was captured in the river Calder, at Stanley, near Wakefield.—*George Roberts; Lofthouse.*

Hybrid between Bactrian Camel and Dromedary.—It being generally understood that the Bactrian camel and the dromedary, while in captivity, will not interbreed, I beg leave to crave space for the insertion of the following:—A female dromedary belonging to this menagerie, when at Bedford a few days ago, dropped a fine calf, the sire of which is a pure Bactrian or double-humped camel, and the hybrid possesses the distinctive characteristics of both parents: it is healthy, is suckled by its dam, and has the appearance, up to the present, of coming to maturity. Within a few hours after its birth, a Bactrian she camel also dropped a calf. The most singular fact is, that both animals dropped similar calves, by the same sire, exactly two years ago.—*E. Stevenson; Secretary, Wombwell's Royal Managerie No. 1, March 29.*

The Water and Rock Pipits.—I have often been asked about two pipits found on the south coast, viz., the water pipit (*Anthus aquaticus*, Bechstein; sive *spinoletta*, Linn.), and the rock pipit (*Anthus obscurus*, Keyserling and Blasius). After two years' investigation, I have at last twelve specimens now before me, obtained at various times from Mr. Swaysland, of Brighton—all birds on which I can rely, and taken near this town. I open the books of Mr. Gould, Dr. Bree, Mr. Morris, the 'Zoologist,' Yarrell, &c. &c. Thus armed, I propose to point out how any tyro in Ornithology may distinguish between the two species in their various states of plumage, and thus to clear up the confusion which has so long existed. Mr. Gould, in his magnificent folio on British birds, states that he has compared and identified the Brighton water pipit with the Continental Anthus aquaticus (Bechstein). This, therefore, is so. Our English bird is more common in spring than in autumn. It is a migrant, while A. obscurus is only a partial one. The former arrives early, departs to breed; the latter breeds here, and remains the whole winter. The earliest date of A. aquaticus before me is a male bird, taken at some little distance from the shore on February 19th, 1869, with vinous breast and blue tinge on the back, in breeding plumage even at this early period, just arrived. The last are a pair with dates 17th and 18th of March, 1869, male and female respectively, in the same dress, showing what is true in both species of these Anthidæ—that the male and female can hardly be distinguished except by dissection. By the first week in April every water pipit has left our shores, not to return till the autumn. I have here an autumn specimen, killed October 26th, 1868, near Shoreham. In this bird the vinous breast and prevailing blue tinge of spring and summer are gone. The under parts and the feathers of the vent are pure white; so accordingly is the outer web of the first tail-feather, for the colour of the vent-feathers rules in both species that of the outer tail-feather, which in A. obscurus is at the same date buff. This distinction is not observable in the summer plumage of the two species, concerning the distinctness of which as species I, without hesitation, am positive. The colour of the beak, usually a good diagnostic distinction, fails. I mention this because I have been formerly myself misled by it. But the under part of the throat in A. aquaticus is white in all stages and both sexes, but spotted in A. obscurus. A. obscurus is olive-green, both male and female, in every month of the year, as my specimens prove. The bird is larger and coarser than

A. aquaticus, the spots are much larger and more numerous, the tail-feathers are stouter and longer; while A. aquaticus is smaller and finer, and with a blue tinge on the back and a vinous breast in spring, which colours disappear in autumn, the former being lost, and the latter changed to pure white. I have a series of the eggs of both birds—some of those of A. aquaticus, which are companions of, and came over from the Continent at the same time with, the one figured by Dr. Bree; but no distinction of value can be given, they are so much alike. Doubtless many a water pipit has done duty for a rock pipit, or, being in autumn plumage, has passed for a large meadow pipit, A. pratensis. Dr. Bree mentions that the first primary in Anthus aquaticus is the shortest, which Mr. Pratt, in the 'Zoologist,' p. 9280, correctly points out in A. aquaticus to be the longest. When placed side by side, the distinction between these British birds in all plumages is very apparent; he that runs may read. If the naturalist find a green tinge, he knows that he has a rock pipit; if he observe the blue and red, he sees a water pipit in summer plumage; when he has a white bird, he is sure that it is A. aquaticus in autumn plumage. The two intermingle sometimes on the sea shore; I know instances of such cases. This has caused the confusion. But one is a land bird, the other a frequenter of the sea shore. I do not here give a fresh diagnosis of each species. The measurements can easily be taken from Dr. Bree and Mr. Yarrell.—*Geo. Dawson Rowley, M.A.; 5, Peel Terrace, Brighton, April 5.*

Richard's Pipit.—A specimen of this bird in summer plumage was taken on Clayton Hill, near Brighton, on March 12th, and sold to Pratt, the naturalist, who has mounted it for Mr. Borrer's collection.—*T. W. Wonfor, Hon. Sec. Brighton and Sussex Nat. History Society.*

Meadow Pipits.—Swaysland informs me that since the 19th of February, when he received the first, he has had brought in twelve meadow pipits, all in summer plumage—no two marked in the same way: one, a very large and handsome bird, about twice the size of ordinary specimens, with scarcely a black feather in the breast. He tells me the meadow pipit in winter plumage is often taken to him as the rock pipit—the latter a very uncommon bird on the coast, while the former is comparatively plentiful.—*Id.*

Firecrested Regulus, near St Leonards.—Mr. R. Kent has been good enough to give me the offer of two firecrested wrens this week, killed at St. Leonards—both in the flesh. I was prevented from buying the first, but got the second one for my collection. It was killed on the 9th. I do not know if this species has been got before in the month of April.—*J. H. Gurney, jun.; Bank, Darlington.*

Pied Jay.—A curious variety of the jay, in which the three middle feathers in each wing are white, was obtained by Mr. Druitt, at Oving, near Chichester, on March 14th.—*T. W. Wonfor.*

Migration of Wood Pigeons.—Several observers having recorded, in the 'Zoologist,' the unusually large migration of wood pigeons that has taken place this winter, and as the study of the migration of birds is just now a subject of great interest to the ornithologist, the following observations, made during the present winter at Carshalton, may be interesting to its readers. The wood pigeon is a very common bird in this district, and remains with us the whole year, without any appreciable alteration in its numbers. This winter they have been quite scarce, except when flocks have passed over in their migration. In the month of December flocks, varying in number from ninety to five hundred, crossed our garden, flying in a S.S.W. direction, at intervals of a few days, the migration taking place, for the most part, in the early part of the day before noon, the birds flying very high. On the 3rd of January an immense flock, probably 6000 or 7000 strong, gathering in stragglers as they flew, crossed our place, coming from the north-east and flying to the south-west. They settled on some tall elms to rest, many of the birds appearing to be tired and exhausted: after resting for a short time they took to wing again. From that day, and for some weeks after, not a pigeon was to be seen in the neighbourhood. Last week, however, a few birds have again appeared about their old haunts.—*A. H. Smee; March* 12, 1869.

Early breeding of Kingfisher.—I sent you two years ago (1867) some notes with regard to the kingfisher, expressing my surprise on discovering that it is such an early breeder. I have now the pleasure of confirming that statement, since the kingfishers are still breeding in the same hole, in a sand-bank which forms the south side of an island in our lake: this year the young ones were on the wing on the 2nd of April; the eggs therefore must have been laid about or soon after the middle of February. Last Friday, April 2nd, one of my gardeners witnessed a most interesting sight: he noticed, from the excitement of the old birds, that something more than common was going on, and, having placed himself very near the nest, partly covered by a piece of broom, he was very soon rewarded by the arrival of the two old birds, which took up their position upon a twig of bramble near the hole, using all their powers of persuasion until they succeeded in inducing one of the young ones to trust itself abroad, when they both accompanied it to a part of the lake which is well sheltered on both sides with trees, and having placed it in safety returned for a second. My belief is, that birds have no knowledge or fear of anything immovable, and that they regarded my man—as long as he was perfectly still, though within a few feet of the hole and but slightly concealed—exactly as they would a tree.—*W. C. Hewitson; Oatlands.*

Redcrested Merganser on the Thames.—I had the good fortune to shoot a fine specimen of the redcrested merganser in Leigh Ray, at the back of Canvey Island, on March 15th. The bird was an adult male, in summer plumage, and was in company with two others: the fishermen told me that they are seldom seen in the river, and none have been shot for some years.—*A. H. Smee; April* 1, 1869.

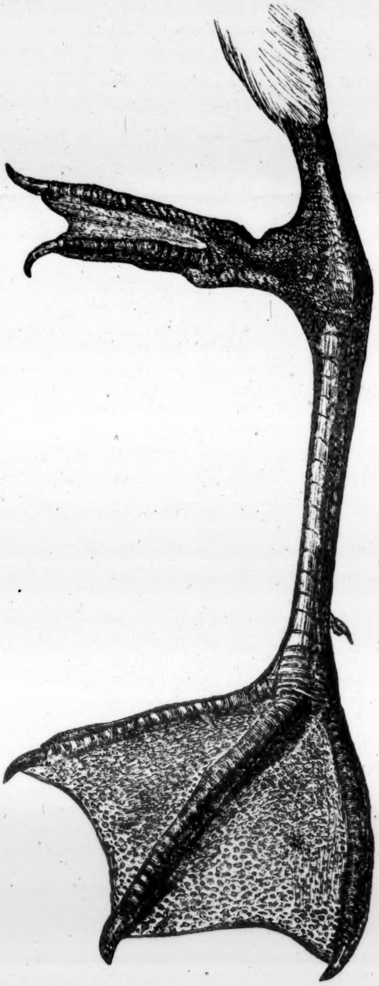
Bridled Guillemot at Bridlington.—I have, in the flesh, a remarkably small specimen of the bridled guillemot, in winter plumage. It was shot at Bridlington on the 10th of March, by Mr. Jones.—*J. H. Gurney, jun.*

Redthroated Diver.—A redthroated diver, in nearly full summer plumage, was shot by Mr. Guthrie, near Rottingdean, on March 14th: the same gentleman saw, on the 29th, three peregrines fighting over his head high in the air.—*T. W. Wonfor.*

Blackthroated Diver at St. Leonard's.—I have now, to preserve, a beautiful specimen of the blackthroated diver, which was shot by Mr. Cook, at Crowhurst, in a horse-pond close to his house: it is about two years old, and is the finest specimen I have ever seen.—*John Bissenden; Archway, St. Leonard's-on-Sea, Feb.* 21, 1869.

The Great Auk.—I ought to have added, in a postscript to my rough "Notes on the Great Auk," that I trust I have not been interfering with the extended work of Mr. G. D. Rowley, who has long been collecting materials. At page 1641, ninth line from the top, erase the words "in this country."—*J. H. Gurney, jun.; Bank, Darlington.*

Curious Malformation in a Gull's Leg.—Mr. Bond has kindly allowed me to make a drawing of one of the most curious malformations I ever recollect having seen. The bird is the common gull (Larus canus), and the monstrosity consists in the presence of two supplementary toes, attached to the inside of the left leg, exactly at the union of the tibia and tarsus, or at what Professor Macgillivray calls the ankle joint. The usual toes are present, and of the ordinary size and shape — the toes of the two feet exhibiting not the slightest difference. The two supplementary toes are in all respects perfectly formed, the nails as well as the connecting web between them being exact facsimiles of those on the ordinary toes, except that they are on a smaller scale. The drawing is a faithful representation of this curious freak of Nature, and really leaves no opening for farther explanation.—*E. Newman.*



Newts feeding on Frog's Spawn.—I observed to-day, in a garden pond, about half a dozen of the lesser newt (*Lophinus punctatus*), feeding greedily on a mass of frog's spawn: the circumstance of the newt devouring frog's spawn is new to me, and may perhaps be worth recording.—*J. H. Gurney; April* 12, 1869.

PROCEEDINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY.

March 15, 1869.—H. W. BATES, Esq., President, in the chair.

Election of Member.

H. Grose Smith, Esq., of Surbiton, was ballotted for, and elected a Member.

Exhibitions, &c.

Mr. Frederick Smith exhibited specimens of Colletes cunicularia, a bee new to this country: they had been sent to him by Mr. Nicholas Cooke, by whose son, Mr. Isaac Cooke, they were captured in the Isle of Wight, between Ventnor and Niton, in May, 1867; four males and five females were taken. It is the largest European species of Colletes, and is the C. hirta of Continental authors, which name, however, must give place to cunicularia of Linnæus, the type of which is extant in the Linnean collection.

Mr. M'Lachlan exhibited a gigantic species of Ephemeridæ, about three inches in expanse of wings. It had been received by Mr. Salvin, from Veragua; and was probably the Palingenia Hecuba of Dr. Hagen.

Mr. Butler exhibited varieties of several butterflies, captured by him in Switzerland, chiefly in the neighbourhood of Chamounix, in July and August, 1868. There were—(1) Anthocharis Cardamines, with the black spot on the fore-wings very small, the black edging confined to the tip of the wing, and the orange colour extending considerably within the black spot—this seemed to be the normal type of the insect in Switzerland; (2) Colias Edusa, remarkable for its large size; (3) Epinephele Janira, one specimen very dark, another very light in colour—the former was the common type in Switzerland; (4) Argynnis Aglaia, with the hind-wings almost entirely black, and the silvery spots on the under side covering the basal and apical parts of the wing; (5) Melitæa Athalia, four varieties, varying from almost entirely black to almost entirely fulvous; and (6) Parnassius Apollo, with small pale ocelli, the ordinary pink markings being pale yellow. Mr. Butler added that Leucophasia Sinapis, the "wood white" as we term it, was common all over Switzerland, not in woods, but in the neighbourhood of water.

Mr. Stainton, who had just returned from Italy, made some remarks on the different habits of the same species in different localities; for instance, at Cannes, Mentone, and other places in the South of Europe, Pyrameis Atalanta was the commonest hybernating butterfly. The species was to be seen everywhere, whilst in this country a hybernated specimen was never seen before April, and rarely before the time when the hawthorn is in blossom.

Mr. Hewitson sent for exhibition a number of butterflies collected in Nicaragua by Mr. Belt; there were twelve species new to Science, and several others which were not previously in Mr. Hewitson's cabinet. The Papilio mentioned at the Meeting of 15th February (S.S. 1607) was believed to be the female of P. Childrenæ, a species distinct from P. Sesostris.

Mr. Hewitson also sent for exhibition two new species of Papilio, from Ecuador, whence they were received by Mr. James Backhouse. As an incident of collecting in Ecuador, it might be mentioned that the captor and his mule were thrown over a precipice together; the gentleman had his head cut and one of his arms broken, and in this plight had to ride for seven days in search of a doctor.

The President exhibited seven forms of Papilio belonging to the Machaon group. Mr. Christopher Ward had purchased the Japanese collection of butterflies from the Paris Exhibition: it included Papilio Machaon and Xuthus, and a third form, which proved to be the P. Xuthulus of Bremer, who described it as being intermediate between the other two; it was first captured in Amoor-land, and the captor took it for a hybrid between Machaon and Xuthus, until it was noticed that its time of appearance was a month earlier than either of the other species. For comparison with these Japanese forms, the President added P. Zelicaon and Asterias, and two other American forms: he observed that in Europe P. Machaon was very constant, and that the allied forms in America exhibited but slight variation from the same type; but in North-Eastern Asia the group appeared to be more unstable, for although the true Machaon was there found, it was associated with two other forms exhibiting greater divergency from the typical form. This was another instance, analogous to what he had before recorded respecting the Theonoe group of the genus Septalis, in which a certain type of form was found to be constant at the opposite ends of its area of distribution, but was liable to variation in intermediate localities; thus tending to show that the development or manufacture of new species takes place, not necessarily over the whole range of distribution of the particular type, but only in limited areas of the total range, where and when the particular circumstances are most favourable to variation.

A letter from Mr. H. L. Schrader was read by the Secretary; the writer described some of his observations on species of Œceticus, from which he inferred that those species are viviparous.

Papers read.

The following papers were read:—"Descriptions of two New Species of Papilio from Ecuador, and of six New Species of Diurnal Lepidoptera from Nicaragua;" by Mr. Hewitson.

"Contributions to an Insect Fauna of the Amazons (Coleoptera, Prionides)." By the President.

"A Monograph of the Panorpidæ found in Europe and the adjoining Countries; with a Description of a New Species from Japan." By Mr. M'Lachlan.

April 5, 1869.—H. W. BATES, Esq., President, in the chair.

Additions to the Library.

The following donations were announced, and thanks voted to the donors:—'Proceedings of the Royal Society,' No. 109; presented by the Society. 'Journal of the Agricultural Society of England,' 2nd Ser., vol. v., Part 1; by the Society. 'Mittheilungen der Schweizerischen entomologischen Gesellschaft,' vols. 1 and 2; by the Society. 'Studien an Acariden,' Von Edouard Claparède; by Sir John Lubbock, Bart. 'Die Otiorhynchiden s. str. nach den morphologischen Verwandschaftsverhältnissen ihus Hautscelets vergleichend dargestellt von Georg Seidlitz;' by the Author. 'Report on the Culture of the Japanese Silkworm, Bombyx Yamamai, in 1867-8, in England,' by Dr. Wallace; by the Author. 'The Insect Hunter's Year-Book for 1868,' and 'The Zoologist' for April; by the Editor, E. Newman, Esq. 'The Entomologists' Monthly Magazine' for April; by the Editors.

The following addition by purchase was also announced:—Gemminger and Von Harold, 'Catalogus Coleopterorum hucusque descriptorum,' Tom. iii.

Exhibitions, &c.

Mr. Pascoe exhibited a new genus of Diaperinæ from Espiritu Santo, in which the horns on the head between or above the eyes, which distinguish many of the males of Platydema, Diaperis, Hoplocephala, &c., were transferred to the apex of the prothorax; the female showed a slight approach to the same formation. Also species of the European genero Apion, Attelabus, and Elleschus, recently discovered in Australia; and several remarkable unpublished forms of Curculionidæ, among which were—a new genus from Macassar allied to Oxycorynus, having the pronotum distinct from the flanks of the prothorax, with its edges serrate; a species from Batchian, with the base of the prothorax prolonged into a slender spine extending backwards half the length of the elytra; another from the same island without any claw-joint, its tarsi therefore only three-jointed; a species allied to Catasarcus, with a single claw; a peculiar globose form from Cape York, allied to Tragopus; a thick-set species from South Africa, with the base of its prothorax ensconced in the elytra; a species from Parà, of doubtful affinity, with a distinct pronotum; &c.

Prof. Westwood exhibited a male specimen, from the Oxford Museum, of the Panorpa from Java, which was described at the previous meeting by Mr. M'Lachlan as Panorpa nematogaster. Also specimens of Blatta melanocephala, which was found very destructive in Orchid-houses, feeding on the buds of young shoots.

Mr. Druce exhibited two male specimens of Papilio Zalmoxis, of Hewitson, from Old Calabar.

Mr. Bond exhibited Sciaphila communana, of Herrich-Schæffer, a moth new to Britain, captured at Wicken Fen, Cambridgeshire; also dried larvæ of Myelophila cribrella, *in situ*, within the stems of thistles.

Mr. F. Smith exhibited several species of humble-bees with their respective parasites or cuckoo-bees. Bombus subterraneus varied from yellow to entirely black, and the parasites Apathus camprestis showed the same variations in colour; the same was true of Bombus muscorum, and its parasite. Bombus terrestris was not liable to variation, its parasite Apathus vestalis was also constant; the same was true of Bombus lapidarius and Apathus rupestris, though the parasite in this case had dark wings. Bombus pratorum was the only moss-building species which was infested by a parasite, Apathus barbabellus, and this did not at all resemble the humble-bee. The first idea that suggested itself was that the cuckoo-bee bore resemblance to the worker of the humble-bee in order to gain access to the nest; but it was only in the social species that the parasites resembled the humble-bees, and the parasite of B. patrorum militated against the theory.

In the course of the conversation which ensued, it was suggested that an entry might be effected into the nest of a solitary bee, in the absence of the true owner, without disguise; whilst in the case of a social species, of which some of the colony would always be at home, the entry of an undisguised stranger would be detected. And in reply to inquiries, it was elicited from Mr. Smith that the moss-building Bombus pratorum was a placid bee, by the side of whose nest a person might sit with impunity; and hence it was to be inferred that this species, by reason of its different mental constitution, might more readily admit a stranger into its nest without opposition, whilst stratagem or deception was necessary to obtain access to the nests of species less peaceably disposed.

Papers read.

The following Papers were read:—

"Descriptions of New Species of Diurnal Lepidoptera." By Mr. W. C. Hewitson.

"Notes on Eastern Butterflies." By Mr. A. R. Wallace.

"Descriptions of New Species of Phytophaga, belonging to the Families Cassididæ and Hispidæ." By Mr. J. S. Baly.

"A Revision of the British Species of Homalota." By Dr. Sharp. One hundred and fifty-seven species were described, of which twenty-nine were new.—*J. W. D.*

7 JY69

On the 15th of March (price Sixpence), was published

THE

INSECT-HUNTER'S YEAR-BOOK

FOR

1868.

(Instituted in 1867 as an attempt to establish a chronological and systematic Record of Discoveries and Observations in British Entomology.)

It contains descriptions of the following novelties, discovered during the year:—Leucania albipuncta (with figure), Dianthœcia Echii (with figure), Plusia Ni, Scoparia Zelleri, Crambus Myellus, Eupœcilia Degreyana, Pterophorus lætus, Enœcyla pusilla, Tabanus sudeticus, Anthrax bifasciata, A. semiatra, A. Pandora, Ceratitis citriperda, Platystoma Umbrarum, Allantus viduus, Camponiscus Healæi, and Prosopis rubicola.

Also a summary of dates and localities of the following captures of rarities:—Pieris Daplidice, Argynnis Lathonia, Vanessa Antiopa, Polyommatus Arion, Deilephila lineata, Chœrocampa Celerio, C. Nerii, Callimorpha Hera, Stauropus Fagi, Xylomiges conspicillaris, Pachetra leucophæa, Laphygma exigua, Polia nigrocincta, Hadena peregrina, and Catocala Fraxini.

☞ *A few copies of the 'Year-Book' for 1867 are still to be had.*

E. Newman, 9, Devonshire Street, Bishopsgate, London.

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Collected Observations on British Reptiles, *Edward Newman*, 1649.
Lacerta agilis sometimes Oviparous, *J. Jenner Weir*, 1665.
Ornithological Notes from North Lincolnshire, *John Cordeaux*, 1666.
Ornithological Notes from Pembrokeshire, *Thomas Dix*, 1670.

QUADRUPEDS.—Otter near Wakefield, *George Roberts*, 1682. Hybrid between Bactrian Camel and Dromedary, *E. Stevenson*, 1682.

BIRDS.—The Water and Rock Pipits, *Geo. Dawson Rowley, M.A.* 1683. Richard's Pipit; Meadow Pipits, *T. W. Wonfor*, 1682. Firecrested Regulus, near St. Leonards, *J. H. Gurney, jun.*, 1683. Pied Jay, *T. W. Wonfor*, 1683. Migration of Wood Pigeons, *A. H. Smee*, 1684. Early breeding of Kingfisher, *W. C. Hewitson*, 1684. Redcrested Merganser on the Thames, *A. H. Smee*, 1684. Bridled Guillemot at Bridlington, *J. H. Gurney, jun.*, 1684. Blackthroated Diver, *T. W. Wonfor*, 1684. Blackthroated Diver at St. Leonards, *John Bissenden*, 1684. The Great Auk, *J. H. Gurney, jun.*, 1684. Curious Malformation in a Gull's Leg, *E. Newman*, 1685.

Newts feeding on Frog's Spawn, *J. H. Gurney*, 1685.

PROCEEDINGS OF SOCIETIES.—Entomological Society, 1685.

SUGGESTIONS

FOR FORMING

COLLECTIONS OF BIRDS' EGGS.

BY PROFESSOR NEWTON, OF CAMBRIDGE.

THE first object is to identify the egg, to be quite sure to what bird it belongs. Mr. Newton justly considers that an egg wrongly named is worse than no specimen at all. As soon as the egg is positively identified, the next object is to authenticate it, by attaching such a mark as can neither be removed nor obliterated. Then follows a full and most minute description of the mode of blowing eggs: it is expressly explained that no hole should be visible, and it is also explained how to avoid this; on no account whatever should there be a hole at either end, and there should be but one hole. The difficulty of removing the contents from eggs that have been sat on and nearly hatched is entirely overcome; and the proper instruments to use are not only described but figured, and the requisite information is given where they may be obtained. Finally, we are shown how to strengthen the shells of delicate eggs before drilling the hole through which their contents are to be emptied.

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